IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Dearnaley et al.	§	Group Art Unit: 1742
Serial No.: 09/901,364	§	Examiner: Oltmans, Andrew L
Filed: July 9, 2001	§	
For: Life Extension of Chromium Coatings and Chromium Alloys	§	Atty. Docket: SwRI-2834

DECLARATION OF GEOFFREY DEARNALEY UNDER 37 C.F.R. § 1.132
IN SUPPORT OF RESPONSE TO FINAL OFFICE ACTION

I, GEOFFREY DEARNALEY, declare as follows:

1. I am an inventor in the referenced application. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true.

2. I received a Bachelor's degree in Physics from the University of Cambridge in 1952 and a Ph.D. degree in Nuclear Physics from the University of Cambridge, in 1956. I was elected to Fellowship of the Royal Society of London in 1993. I worked for over 31 years at Harwell Laboratory of the U.K. Atomic Energy Authority (UKAEA) in the area of ion implantation and the effects of ionic bombardment on materials of all kinds. In April 1993, I began working for the Southwest Research Institute (SwRI), San Antonio, Texas, in the area of materials engineering. I was Vice President of the Materials and Structures Division at SwRI until 1998 and have been a consultant to SwRI since my retirement in December of 1998.

3. During my work in the area of materials engineering, I have worked extensively in the field of ion beam surface modification including the formation of "amorphous" carbon or "diamond-like" carbon (DLC) coatings, and multi-layered coatings (nano-composite coatings).

At the Harwell Laboratory of the UKAEA, I was head of the group that first discovered the ion beam-assisted process for depositing diamond-like carbon (DLC) coatings in 1983. In each of the above, hardness measurements were a very important aspect of the work.

4. Persons of ordinary skill in the art would understand that hardness measurements of thin ion implanted layers, thin surface modified layers, and relatively thin coatings and substrates must be performed using very low loads in the millinewton range. Persons of ordinary skill in the art would recognize that such testing is conducted using a nano-indentation hardness tester, including a diamond Berkovich indentor.

5. Persons of ordinary skill in the art also would understand that the more widely used methods for testing hardness, such as Rockwell, Knoop, Brinell, etc., are too invasive or severe to provide a measure of hardness of thin ion implanted layers.

I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application of any patent issuing thereon.

SIGNED this 16th day of October, 2003.

Geoffrey Dearnaley

Geoffrey Dearnaley PhD., FRS